Claims

We claim:

1. A method for compressing a digital image, comprising:

providing the digital image in terms of an array of pixels;

converting the digital image into Image Line Bit Patterns by Frame Decomposition of the array of pixels; and

independently transforming each Image line Bit Pattern into a corresponding Bit Mask Indicator by Image Line Encoding.

2. The method of claim 1, further comprising generating a bit stream that includes Bit Stream Header Information and the Bit Mask Indicators, wherein the Bit Stream Header Information includes Constant Digital Image Data.

3. The method of claim 2, wherein the Bit Stream Header Information is decoupled from the Bit Mask indicators.

4. The method of claim 1, wherein the independently transforming includes compressing at least one of said Image Line Bit Patterns.

5. The method of claim 4, wherein the compressing results in a compression percent exceeding 90%.

6. The method of claim 4, wherein the compressing is lossless.

7. The method of claim 6, wherein the lossless compressing results in a compression percent exceeding 90%.

8. The method of claim 4, wherein the compressing is lossy.

9. The method of claim 1, wherein each Bit Mask Indicator is independently selected from the group consisting of a Default Bit Mask Indicator, a Global 0's Bit Mask Indicator, a Global 1's Bit Mask Indicator, an External Bit Mask Indicator, a Repeating Bit Mask Indicator, and a Recurring Bit Mask Indicator.

10. The method of claim 1, wherein at least one Bit Mask Indicator is selected from the group consisting of a Default Bit Mask Indicator, a Global 0's Bit Mask Indicator, a Global 1's Bit Mask Indicator, an External Bit Mask Indicator, a Repeating Bit Mask Indicator, and a Recurring Bit Mask Indicator.

11. The method of claim 1, wherein the array of pixels comprises a two-dimensional array of pixels.

12. The method of claim 1, wherein the array of pixels comprises a three-dimensional array of pixels.

13. The method of claim 1, wherein each pixel of the array of pixels comprises a color having at least three color components.

14. The method of claim 13, wherein each color component includes 2^B color intensities, wherein B is a number of bits allocated to describe each color intensity, wherein the B bits is divided into B/P Hue Intensity Bit Patterns such that each Hue Intensity Bit Pattern comprises P bits selected from 2^P unique Hue Intensity Bit Patterns subject to B modulus P = 0, wherein $B \geq 1$, and wherein $1 \leq P \leq B$.

15. The method of claim 14, wherein B=8 and P=2.

16. The method of claim 14, wherein the Image Line Bit Patterns include 2^P-1 Image Line Bit Patterns in each pixel row of the array of pixels.

17. A method for transmitting a digital image from a digital image source to a digital image receiver, comprising:

providing at the digital image source the digital image in terms of an array of pixels;

converting the digital image into Image Line Bit Patterns by Frame Decomposition of the array of pixels;

independently transforming each Image line Bit Pattern into a corresponding Bit Mask Indicator by Image Line Encoding;

generating a bit stream that includes Bit Stream Header Information and the Bit Mask Indicators, wherein the Bit Stream Header Information includes Constant Digital Image Data;

transmitting the bit stream over a data path to the digital image receiver;

parsing the bit stream, including parsing the Bit Mask Indicators;

translating the Bit Mask Indicators into corresponding Image Line Bit Patterns; and

restoring the digital image from the Image Line Bit Patterns by Frame Recreation.

18. A system for compressing a digital image, comprising:

providing the digital image in terms of an array of pixels;

means for converting the digital image into Image Line Bit Patterns by Frame Decomposition of the array of pixels; and

means for independently transforming each Image line Bit Pattern into a corresponding Bit Mask Indicator by Image Line Encoding.

19. The system of claim 18, further comprising means for generating a bit stream that includes Bit Stream Header Information and the Bit Mask Indicators, wherein the Bit Stream Header Information includes Constant Digital Image Data.

20. The system of claim 19, wherein the Bit Stream Header Information is decoupled from the Bit Mask indicators.

21. The system of claim 18, wherein the means for independently transforming includes means for compressing at least one of said Image Line Bit Patterns.

22. The system of claim 21, wherein the means for compressing effectuates a compression percent exceeding 90%.

23. The system of claim 21, wherein the means for compressing effectuates lossless compression.

24. The system of claim 23, wherein the lossless compression is characterized by a compression percent exceeding 90%.

25. The system of claim 21, wherein the means for compressing effectuates lossy compression.

26. The system of claim 18, wherein each Bit Mask Indicator is independently selected from the group consisting of a Default Bit Mask Indicator, a Global 0's Bit Mask Indicator, a Global 1's Bit Mask Indicator, an External Bit Mask Indicator, a Repeating Bit Mask Indicator, and a Recurring Bit Mask Indicator.

27. The system of claim 18, wherein at least one Bit Mask Indicator is selected from the group consisting of a Default Bit Mask Indicator, a Global 0's Bit Mask Indicator, a Global 1's Bit Mask Indicator, an External Bit Mask Indicator, a Repeating Bit Mask Indicator, and a Recurring Bit Mask Indicator.

28. The system of claim 18, wherein the array of pixels comprises a two-dimensional array of pixels.

29. The system of claim 18, wherein the array of pixels comprises a three-dimensional array of pixels.

30. The system of claim 18, wherein each pixel of the array of pixels comprises a color having at least three color components.

31. The system of claim 30, wherein each color component includes 2^B color intensities, wherein B is a number of bits allocated to describe each color intensity, wherein the B bits is divided into B/P Hue Intensity Bit Patterns such that each Hue Intensity Bit Pattern comprises P bits selected from 2^P unique Hue Intensity Bit Patterns subject to B modulus P = 0, wherein $B \geq 1$, and wherein $1 \leq P \leq B$.

32. The system of claim 31, wherein B=8 and P=2.

33. The system of claim 31, wherein the Image Line Bit Patterns include 2^P-1 Image Line Bit Patterns in each pixel row of the array of pixels.

34. A system for transmitting a digital image from a digital image source to a digital image receiver, comprising:

providing at the digital image source the digital image in terms of an array of pixels;

means for converting the digital image into Image Line Bit Patterns by Frame Decomposition of the array of pixels;

means for independently transforming each Image line Bit Pattern into a corresponding Bit Mask Indicator by Image Line Encoding;

means for generating a bit stream that includes Bit Stream Header Information and the Bit Mask Indicators, wherein the Bit Stream Header Information includes Constant Digital Image Data;

means for transmitting the bit stream over a data path to the digital image receiver;

means for parsing the bit stream, including parsing the Bit Mask Indicators;

means for translating the Bit Mask Indicators into corresponding Image Line Bit Patterns; and

means for restoring the digital image from the Image Line Bit Patterns by Frame Recreation.

35. A system for compressing a digital image, comprising:

a digital image source adapted to generate the digital image in terms of an array of pixels; and

compression algorithms adapted to convert the digital image into Image Line Bit Patterns by Frame Decomposition of the array of pixels and to independently transform each Image line Bit Pattern into a corresponding Bit Mask Indicator by Image Line Encoding.

36. The system of claim 35, wherein the compression algorithms are further adapted to generate a bit stream that includes Bit Stream Header Information and the Bit Mask Indicators, and wherein the Bit Stream Header Information includes Constant Digital Image Data.

37. The system of claim 36, wherein the Bit Stream Header Information is decoupled from the Bit Mask indicators.

38. The system of claim 35, wherein to independently transform each Image line Bit Pattern includes to compress at least one of said Image Line Bit Patterns.

39. The system of claim 38, wherein to compress effectuates a resulting compression percent that exceeds 90%.

40. The system of claim 38, wherein to compress includes to effectuate lossless compression.

41. The system of claim 40, wherein to effectuate lossless compression includes to effectuate a resulting compression percent that exceeds 90%.

42. The system of claim 38, wherein to compress includes to effectuate lossy compression.

43. The system of claim 35, wherein each Bit Mask Indicator is independently selected from the group consisting of a Default Bit Mask Indicator, a Global 0's Bit Mask Indicator, a Global 1's Bit Mask Indicator, an External Bit Mask Indicator, a Repeating Bit Mask Indicator, and a Recurring Bit Mask Indicator.

44. The system of claim 35, wherein at least one Bit Mask Indicator is selected from the group consisting of a Default Bit Mask Indicator, a Global 0's Bit Mask Indicator, a Global 1's Bit Mask Indicator, an External Bit Mask Indicator, a Repeating Bit Mask Indicator, and a Recurring Bit Mask Indicator.

45. The system of claim 35, wherein the array of pixels comprises a two-dimensional array of pixels.

46. The system of claim 35, wherein the array of pixels comprises a three-dimensional array of pixels.

47. The system of claim 35, wherein each pixel of the array of pixels comprises a color having at least three color components.

48. The system of claim 47, wherein each color component includes 2^B color intensities, wherein B is a number of bits allocated to describe each color intensity, wherein the B bits is divided into B/P Hue Intensity Bit Patterns such that each Hue Intensity Bit Pattern comprises P bits selected from 2^P unique Hue Intensity Bit Patterns subject to B modulus P = 0, wherein $B \geq 1$, and wherein $1 \leq P \leq B$.

49. The system of claim 48, wherein B=8 and P=2.

50. The system of claim 48, wherein the Image Line Bit Patterns include 2^P-1 Image Line Bit Patterns in each pixel row of the array of pixels.

51. A computer network for transmitting a digital image, expressed as an array of pixels, from a digital image source to a digital image receiver, comprising:

a first computer system comprising compression algorithms adapted to: convert the digital image into Image Line Bit Patterns by Frame Decomposition of the array of pixels, independently transform each Image line Bit Pattern into a corresponding Bit Mask Indicator by Image Line Encoding, and generate a bit stream that includes Bit Stream Header Information and the Bit Mask Indicators, wherein the Bit Stream Header Information includes Constant Digital Image Data;

means for transmitting the bit stream from the first computer system to a second computer system; and

the second computer system comprising decompression algorithms adapted to: parse the bit stream such that each Bit Mask Indicator is isolated, translate the Bit Mask Indicators into corresponding Image Line Bit Patterns, and restore the digital image from the Image Line Bit Patterns by Frame Recreation.

52. A computer program product, comprising a computer usable medium having a computer readable program code embodied therein, wherein the computer readable program code includes algorithms selected from the group consisting of compression algorithms, decompression algorithms, and a combination thereof:

wherein the compression algorithms are adapted to: convert the digital image into Image Line Bit Patterns by Frame Decomposition of the array of pixels, independently transform each Image line Bit Pattern into a corresponding Bit Mask Indicator by Image Line Encoding, and generate a bit stream that includes Bit Stream Header Information and the Bit Mask Indicators, wherein the Bit Stream Header Information includes Constant Digital Image Data; and

wherein the decompression algorithms are adapted to: parse the bit stream such that each Bit Mask Indicator is isolated, translate the Bit Mask Indicators into corresponding Image Line Bit Patterns, and restore the digital image from the Image Line Bit Patterns by Frame Recreation.